



Environmental contaminants and human health in the Canadian Arctic

Author(s): Donaldson SG, Van Oostdam J, Tikhonov C, Feeley M, Armstrong B, Ayotte P, Boucher O, Bowers W, Chan L, Dallaire F, Dallaire R, Dewailly E, Edwards J, Egeland GM, Fontaine J, Furgal C, Leech T, Loring E, Muckle G, Nancarrow T, Pereg D, Plusquellec P, Potyrala M, Receveur O, Shearer RG

Year: 2010

Journal: The Science of The Total Environment. 408 (22): 5165-5234

Abstract:

The third Canadian Arctic Human Health Assessment conducted under the Canadian Northern Contaminants Program (NCP), in association with the circumpolar Arctic Monitoring and Assessment Programme (AMAP), addresses concerns about possible adverse health effects in individuals exposed to environmental contaminants through a diet containing country foods. The objectives here are to: 1) provide data on changes in human contaminant concentrations and exposure among Canadian Arctic peoples; 2) identify new contaminants of concern; 3) discuss possible health effects; 4) outline risk communication about contaminants in country food; and 5) identify knowledge gaps for future contaminant research and monitoring. The nutritional and cultural benefits of country foods are substantial; however, some dietary studies suggest declines in the amount of country foods being consumed. Significant declines were found for most contaminants in maternal blood over the last 10 years within all three Arctic regions studied. Inuit continue to have the highest levels of almost all persistent organic pollutants (POPs) and metals among the ethnic groups studied. A greater proportion of people in the East exceed Health Canada's guidelines for PCBs and mercury, although the proportion of mothers exceeding these guidelines has decreased since the previous assessment. Further monitoring and research are required to assess trends and health effects of emerging contaminants. Infant development studies have shown possible subtle effects of prenatal exposure to heavy metals and some POPs on immune system function and neurodevelopment. New data suggest important beneficial effects on brain development for Inuit infants from some country food nutrients. The most successful risk communication processes balance the risks and benefits of a diet of country food through input from a variety of regional experts and the community, to incorporate the many socio-cultural and economic factors to arrive at a risk management decision that will be the most beneficial in Arctic communities.

Source: <http://dx.doi.org/10.1016/j.scitotenv.2010.04.059>

Resource Description

Exposure : ☐

weather or climate related pathway by which climate change affects health

Food/Water Quality, Other Exposure

Food/Water Quality: Other Food Quality

Climate Change and Human Health Literature Portal

Food Quality (other): Heavy metals; Persistent organic pollutants

Geographic Feature: ☒

resource focuses on specific type of geography

Arctic

Geographic Location: ☒

resource focuses on specific location

Non-United States

Non-United States: Non-U.S. North America

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Neurological Effect, Other Health Impact

Other Health Impact: Toxicity from persistent organic pollutants (POPs) and metals

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☒

populations at particular risk or vulnerability to climate change impacts

Children, Elderly, Low Socioeconomic Status, Pregnant Women, Racial/Ethnic Subgroup, Workers

Other Racial/Ethnic Subgroup: Northern Aboriginal

Resource Type: ☒

format or standard characteristic of resource

Review

Timescale: ☒

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content